

THE GENUS *LINDERNIA* ALL. (SCROPHULARIACEAE) IN INDIA¹

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The Indo-Burmese species of the genus *Lindernia* All. have been revised by Mukherjee (1945). Since then, there have been considerable change in the circumscription and nomenclature of many of the taxa. The present paper is a taxonomic revision of the Indian species of the genus. In all, 22 species have been recognised, two of them, *L. molluginoides* and *L. elata*, being new records for India. A new variety, *L. tenuifolia* var. *pygmaea* Sivarajan & Philip Mathew is recorded from Kerala. An artificial key for the species, their current nomenclature, and notes on their salient features, habitat and world distribution are provided.

The genus *Lindernia* All., as currently recognised, has about 100 species described under various generic names, viz. *Lindernia* All., *Vandellia* Linn., *Bonnaya* Link & Otto and *Ilysanthes* Rafin., circumscribed mainly on the basis of number of fertile stamens and nature of staminodes. However, generic alignments within this group has long been a matter of discussion and controversy. Linnaeus treated *Lindernia* and *Vandellia*, both with four perfect stamens, as two distinct genera (cf. Mukherjee 1945) though Bentham and many others preferred to unite them. *Ilysanthes* and *Bonnaya* are characterised by two perfect stamens and two staminodes but differ in their relative position. In *Ilysanthes*, the posterior pair is fertile and the anterior staminodal whereas in *Bonnaya* they are in the reverse order. Bentham (1835, 1846, 1876), J. D. Hooker (1884) and many others have preferred to keep them as distinct genera while others have united them under *Ilysanthes*. Blatter and Hallberg (1918) have pointed out the inadequacy of the stami-

nal characters to circumscribe genera within this group but, have still opted not to disturb the then prevailing system of treating them under different generic names. Haines (1922) reduced the four genera into two but, in a different manner. He included *Bonnaya* in *Vandellia* and *Ilysanthes* in *Lindernia*, thus mixed up taxa with four and two perfect stamens. He recognised these groups mainly based on major vein configurations in their leaves, *Vandellia* with penninerved leaves and *Lindernia* with basally veined ones.

Neither staminal nor venation characters have provided adequate and reliable taxonomic criteria for circumscribing the different genera within this group. In fact, 'it would have been more appropriate for him (Haines) to go one step further and combine the four into a single genus' (Mukherjee 1945). This was however, done by Pennell (1935, 1943) who combined all these taxa under the single generic name *Lindernia*, a natural assemblage characterised by 'the remarkably uniform corolla, curiously recurving anterior filaments and by similar septicidal dehiscence of capsule'.

Indian species of this genus have been revised by Mukherjee (1945). He recognised 28

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species in all, from the Indo-Burmese region. Subsequent studies have however, altered the concept of species in this genus very drastically (Philcox 1964, 1968). Circumscription of several species have been expanded. For instances, *L. anagallis* (Burm. f.) Pennell, currently includes several taxa which were previously described under different binomials like *L. cordifolia* and *L. angustifolia*. *L. sessiliflora* is understood to be conspecific with *L. nummularifolia* and *L. laxa* with *L. pusilla*. Several species described by Blatter and Hallberg (1918) have been reduced to synonymy while one of them, *L. quinqueloba* (Blatt. & Hallb.) Mukherjee, which almost crosses the generic limits in the nature of corolla is no more considered to be a natural species (Saldanha 1963). Consequent to this change in the concept of species, several species recognised by earlier workers have been reduced to synonymy. The purpose of this paper is to bring the Indian species of this genus in line with the current concept of species in the genus. A study of the materials available in the various herbaria (mentioned at the end) have revealed that 22 species are available in India of which *L. elata* and *L. molluginoides* have hitherto not been known to occur here.

KEY TO THE SPECIES

1. Perfect stamens usually two:
 2. Capsules linear, much longer than the calyx:
 3. Lvs broadly ovate/elliptic:
 4. Lvs petioled *ruellioides*
 4. Lvs sessile or subsessile:
 5. Lvs aristate-dentate *ciliata*
 5. Lvs crenate-serrate *antipoda*
 3. Lvs linear/oblong:
 6. Lvs distinctly serrate *oppositifolia*
 6. Lvs shallowly toothed or subentire:
 7. Lamina 15 cm or more long *estaminodosa*
 7. Lamina not more than 4 cm long *tenuifolia*
 2. Capsules subglobose or ovoid:
 8. Capsules equalling the calyx:
 9. Lvs ovate/oblong *minima*
 9. Lvs orbicular/rounded *rotundifolia*
 8. Capsules longer than the calyx:
 10. Pedicels deflexed in fruit:
 11. Corolla twice as long as the calyx *parviflora*
 11. Corolla 3-4 times longer than calyx *hyssopioides*
 10. Pedicels not deflexed in fruit *manilaliana*
1. Perfect stamens usually 4:
 12. Capsules equalling or shorter than calyx:
 13. Flowers in terminal racemes, also axillary, solitary:
 14. Calyx shortly toothed *crustacea*
 14. Calyx deeply divided:
 15. Plants hairy *viscosa*
 15. Plants glabrous *multiflora*
 13. Flowers never in terminal racemes, always axillary, solitary:
 16. Calyx shortly toothed:
 17. Plants glabrous *molluginoides*
 17. Plants hairy *hookeri*
 16. Calyx divided to the base:
 18. Plants glabrous:
 19. Lvs pinnately veined *elata*
 19. Lvs basally veined *procumbens*
 18. Plants hairy:
 20. Lvs ovate/oblong, densely hairy on both sides *montana*
 20. Lvs ovate/orbicular, sparsely hairy *pusilla*
 12. Capsules much exceeding the calyx:
 21. Calyx shortly toothed at apex *nummularifolia*
 21. Calyx deeply divided *anagallis*

L. ruellioides (Colsm.) Pennell, Brittonia 2 : 182. 1936 & J. Arn. Arb. 20: 81. 1939; Mukherjee, J. Ind. Bot. Soc. 24: 133. 1945; Philcox, Kew Bull. 17: 484. 1964 & 22: 54. 1968. *Gratiola ruellioides* Colsm. Prod. Desc. Grat. 12. 1793. *Bonnaya reptans* (Roxb.) Spreng. Syst. 1: 41. 1824; Hook. f. Fl. Brit. Ind. 4: 284. 1884. *Ilysanthes reptans* (Roxb.) Urb. in Berl. Deutsch. Bot. Ges. 2: 436. 1884; Gamb. Fl. Madr. 962. 1923.

Stem usually creeping and rooting at nodes; leaves ovate/elliptic, obtuse; flowers lilac or purple; pedicels slender; capsules linear, acute, to 2 cm long.

In moist or swampy grasslands, cultivated fields and waste places, throughout tropical and subtropical Asia. In India Eastern Himalayas and W. ghats.

Selected specimens studied:

Deb 25817, 26005, Panigrahi 14692, 14890 (NEFA), Joseph 37410 (Nongpoh), Kanjilal 927 (Khasi & Jaintia Hills), 5370 (Garo Hills), Bor 21017 (Naga Hills), Sharma 9770, 16813, 13395 (Khasi & Jaintia Hills), Kanjilal 3377 (Lakhimpur), Sworooapanandan 381, 403 (Palghat), Calder & Ramaswami 374, Rama Rao 1501 (Kerala), Clarke 25171, King 4843 (Sikkim), Deb 27095 (Tripura), Clarke 45671, Hook. f. & Thoms. sn. 323542 (Meghalaya).

L. ciliata (Colsm.) Pennell, *Brittonia* 2: 182. 1936 & J. Arn. Arb. 24: 253. 1943; Mukherjee, J. Ind. Bot. Soc. 24: 133. 1945. *Gratiola ciliata* Colsm. Prod. Desc. Grat. 14. 1793. *Bonnaya brachiata* Link & Otto, Ic. Pl. Select. 25, t. 11. 1820; Hook f. Fl. Brit. Ind. 4: 284. 1884; Blatt. & Hallb., J. Bombay nat. Hist. Soc. 25: 418. 1918. *Ilysanthes serrata* (Roxb.) Urb. in Berl. Detsch. Bot. Ges. 2: 436. 1884; Gamble Fl. Madr. 962. 1923. *Vandellia brachiata* (Link & Otto) Haines, Bot. Bih. & Or. 632. 1922. *Lindernia bracteoides* (Blatt. & Hallb.) Mukherjee, J. Ind. Bot. Soc. 24: 133. 1945.

Erect annuals; leaves elliptic-oblong, aristate-dentate; flowers bluish or pink, rarely white; pedicels upto 1 cm long; capsules linear, 1.5 cm long.

Very common in moist or wet lateritic slopes and grasslands during monsoon, in South and S. E. Asia and Australia. In India throughout.

Selected specimens examined:

Deka 20283 (Assam), Panigrahi sn. 16007

(Orissa), Blatter & Hallberg 1514 (type material of *Bonnaya bacteoides* from Mt. Abu. S. K. Mukherjee has noted on the sheet that the characters selected by the authors to distinguish this from *B. bracteata* do not hold good); A. S. Rao 47924 (NEFA); Sebastine 8761 (Rewa, M. P.), Panigrahi 13207 (Bilaspur), Arora 4706 (Allahabad); Reddi 99032 (Lonavla), Billore 113184 (Thana, Pune); Balakrishnan 11021 (Andhra); Sivarajan 283 (Calicut), Thomson sn. 323506 (Karnataka); Fischer 2248 (Coimbatore); Clarke 25128 (Sikkim).

L. antipoda (Linn.) Alston in Trimen Fl. Ceyl. 6. suppl. 214. 1931; Philcox, Kew Bull. 17: 484. 1964 & 22: 57. 1968. *Ruellia antipoda* Linn. Sp. Pl. 635. 1753. *Bonnaya grandiflora* (Retz.) Spreng. Syst. 1: 41. 1824. *B. veronicifolia* (Retz.) Spreng. Syst. 1: 41. 1824; Hook. f. Fl. Brit. Ind. 4: 285. 1884. *Ilysanthes veronicifolia* (Retz.) Urb. in Berl. Deutsch. Bot. Ges. 2: 436. 1884; Gamb. Fl. Madr. 962. 1923; *Lindernia veronicifolia* (Retz.) Haines, Bot. Bih. Or. 634. 1922, excl. *Vandellia augustifolia*, Mukherjee, J. Ind. Bot. Soc. 24: 133. 1945. *L. anagallis* (Burm. f.) Pennell, var. *grandiflora* (Retz.) Mukherjee, J. Ind. Bot. Soc. 24: 133. 1945.

Prostrate or diffuse herbs; leaves variable, serrate; flowers blue with yellow mouth, axillary, solitary and in terminal biparous racemes; fruiting pedicels spreading, 1.5 cm long; capsule twice as long as the calyx, 1-1.5 cm long.

Common in swamps, grasslands, waste places and also as a weed in cultivated fields. Tropical and subtropical Asia, from India eastwards. In India throughout.

Selected specimens examined:

Ellis 19984, Sivarajan 389, 1014 (Calicut), Sebastine 20826, Fischer 1814 (Palghat); Ramamurthy 25994 (Trichur), Fischer 4508, Hook. f. & Thomas. sn. 323584 (MH, Kerala); Sebastine 16547 (Kottayam); Rao 26764,

Karthikeyan 26880, Rao 26880 (This sheet in MH contains two different elements, *L. anti-poda* and *L. hyssopioides*), Deb 31296 (Salem); Subramanyam 9379, 8290 (Madurai), Sharma 35822, Subba Rao 36146, Subramanyam 10392, (Nilgiris), Henry 45547 (Chingalpet), Shetty 32233, Vajravelu 38861 (Tinnevely); Sebastine 2486, Chandrabose 31135 (Coimbatore); Bourne 149, Fischer 226, 817 (Tamilnadu); Meebold 10114 (Pondicherry); Subba Rao 32019 (Chittoor), 19720, Balakrishnan 10792 (Visakhapatanam); Panigrahi 13218 (Bilaspur, M. P.); A. S. Rao 39140 (Assam); Biswas 5159 (Tripura); Meebold 10114 (Pondicherry); Fischer 1814, 4508 (Kerala); Haines 575 (Bihar); Panigrahi 8475 (Orissa).

L. oppositifolia (Linn.) Mukherjee, J. Ind. Bot. Soc. 24: 134. 1945. *Gratiola oppositifolia* Linn. Sp. Pl. (Ed. Willd.) 1: 105. 1797. *Bonnaya oppositifolia* (Linn.) Spreng. Syst. 1: 41. 1824; Hook. f. Fl. Brit. Ind. 4: 286. 1884. *Vandellia oppositifolia* (Linn.) Haines, Bot. Bih. Or. 634. 1922. *Ilysanthes oppositifolia* (Linn.) Urb. in Berl. Deutsch. Bot. Ges. 2: 435. 1884; Gamble Fl. Madr. 962. 1923.

Erect, annuals; leaves oblong-obtuse, serrate; flowers blue in terminal racemes; capsules linear, much exceeding the calyx; pedicels deflexed in fruits, almost as long as the fruit.

Common weed in wet low lands and paddy fields, in India.

Selected specimens examined:

Ramamurthy 22720 (Ramnad), 17652 (N. Arcot), Joseph 3956, Sivrajan 317 (Calicut); Henry 45549 (Chingalpet); 2110 (Coimbatore); Reddi 97926 (Lonavla); Panigrahi 12584 (Mirzapur, U.P.); Hooper 39629 (Orissa); Fischer 2110 (Coimbatore); Thomson sn. 322701 (CAL).

L. estaminodosa (Blatt. & Hallb.) Mukherjee, J. Ind. Bot. Soc. 24: 133. 1945. *Bonnaya estaminodosa* Blatter & Hallberg, J. Bombay nat. Hist. Soc. 25 :416 1918.

Erect, profusely branched annuals, 20-40 cm tall; leaves oblong to oblanceolate, entire or sub-entire; flowers in terminal racemes; staminodes absent; fruiting pedicels and capsules about four times as long as the calyx.

In wet low lands. This species is extremely rare and was collected from the back waters at Cherukunnu, Cannanore Dt. Distributed along the western peninsular India.

Specimens examined:

Sivarajan 518 (Cannanore), Talbot 1930, 1584 (Karnataka).

L. tenuifolia (Colsm.) Alston in Trim. Fl. Ceyl. 6. suppl. 214. 1931; Mukherjee, J. Ind. Bot. Soc. 24: 134. 1945; Philcox, Kew Bull. 22: 62. 1968. *Gratiola tenuifolia* Colsm. Prod. Desc. Grat. 8. 1793. *Bonnaya tenuifolia* (Colsm.) Spreng. Syst. 1: 42. 1842; Hook. f. Fl. Brit. Ind. 4: 286. 1884. *Ilysanthes tenuifolia* (Colsm.) Urb. in Berol. Deutsch. Bot. Ges. 2: 435. 1884; Gamb. Fl. Madr. 962. 1923. *Vandellia tenuifolia* (Colsm.) Haines, Bot. Bih. Or. 634. 1922.

Erect, or diffuse annuals, branches 5-8 cm long; leaves narrow, linear-oblong, upto 3 x 0.3 cm; flowers solitary axillary or leaf-opposed, 8 mm long; pedicels deflexed in fruit, 1.2 cm long; capsules linear, 8 mm long.

In wet lowlands and along backwaters in Malaysia, Indochina, Sri Lanka and India. In India, Bengal and S. India.

Specimens examined:

Meebold 12684 (Quilon), CAL (erroneously identified as *Bonnaya oppositifolia*); Sivarajan 517, Sivarajan & Suresh 21627 (Calicut). These specimens match well with the Koenig's material kept at Vahl's Herbarium at

the University of Copenhagen (only photograph seen) based on which Colsmann described the species.

var. **pygmaea** Sivarajan & Philip Mathew,
var. nov.

Haec varietas habitu multu diverso, pygmaea, foliis pseudo-acicularibus, floribus roseis et capsulis brevioribus habit ut in *L. tenuifolia* typica quae maior est et folia plana, flores caeruleos, capsula et pedicellos fructigeros longiores habet.

Erect, tufted herbs 3-5 cm long; leaves linear, apparently acicular, up to 2 cm long; flowers axillary or leaf-opposed, solitary, pale blue, much smaller than in the typical form; pedicels almost as long as the capsule, deflexed in fruit; capsules linear, 5 mm long.

Holotype Sivarajan 1368 (Kallai, Calicut) is deposited in the Central National Herbarium, Howrah and isotypes in the Calicut University Herbarium.

L. minima (Benth.) Mukherjee, J. Ind. Bot. Soc. 24: 132. 1945. *Ilysanthes minima* Benth. in DC. Prodr. 10: 420. 1846; Hook. f. Fl. Brit. Ind. 4: 284. 1884; Gamb. Fl. Madr. 961. 1923.

Leaves only 2-3 pairs, entire, flowers yellow; pedicels capillary; capsules subglobose, equaling the fruiting calyx.

In wet or moist grounds, in S. India.

This species has been added on the authority of Mukherjee. We have not seen any material of this species from India.

L. rotundifolia (Linn.) Mukherjee, J. Ind. Bot. Soc. 24: 132. 1945. *Gratiola rotundifolia* Linn. Mant. 274. 1767. *Ilysanthes rotundifolia* (Linn.) Benth. in DC. Prodr. 10: 420. 1846; Hook. f. Fl. Brit. Ind. 4: 254. 1884; Gamb. Fl. Madr. 962. 1923.

Erect or diffuse herbs; leaves sessile, orbicular or ovate, entire or serrate; flowers white with

purple blotches; capsules globose, equalling the fruiting calyx.

Common in wet or marshy lowlands, during monsoon, in S. India, Sri Lanka, Mauritius and Madagascar.

Selected specimens examined:

Vivekanandan 21347, 22993 (Kottayam), Sharma 41674 (Idukki), Sivarajan 433, 1343 (Calicut), Subramanyam 8220 (Madurai).

L. parviflora (Roxb.) Haines, Bot. Bih. Or. 645. 1922; Pennell, Acad. Nat. Soc. Phil. Mon. 5: 29. 1943; Mukherjee, J. Ind. Bot. Soc. 24: 132. 1945. *Gratiola parviflora* Roxb. Cor. Pl. 3: 3, t. 204. 1811. *Ilysanthes parviflora* (Roxb.) Benth. Scroph. Ind. 34. 1835 & in DC. Prodr. 10: 419. 1846; Hook. f. Fl. Brit. Ind. 4: 283. 1884; Gamb. Fl. Madr. 961. 1923.

A variable species, branched or unbranched; leaves ovate-acute, sessile, 3-veined from base, entire; flowers axillary, solitary, white with purple blotches; pedicels long, deflexed in fruit; corolla variable in size, capsules ovoid or ellipsoid, almost twice as long as the calyx.

In wet low lands and cultivated fields during rainy season, in Trop. Africa, Indo-China and major part of India. The typical form of the species is branched from base, slightly suffruticose with well developed leaves and axillary, solitary flowers. Some of the specimens collected by the authors are delicate, sparsely branched, and fleshy with the upper leaves reduced to bracts giving the inflorescence an appearance of a raceme.

Selected specimens examined:

Sethi & Negi 25900 (Kottayam), Barnes sn. 106065 (Vandalur), Lawson 154 (Travancore), Fischer 1812 (Palghat), Sivarajan 1658, 21632 (Calicut); Subramanyam 5108 (W. Godavari), Sebastine 9767 (Nalconda), 8045 (Hyderabad),

Chandrabose 29760 (Coimbatore), Ramamurthy 21036 (Ramnad), Vajravelu 34010 (Tinnevely), 22443 (Salem), Talbot 864 (N. Canara), Sebastine 13926 (Jubbulpore), Panigrahi 16777 (Bilaspur), Rolla Rao 77744 (Bombay), Raizada 22768—with white flowers—(Gir, Saurashtra), Santapau 475 (Khandala), Clarke 26263, 26275, Hook. f. sn. 323428 (CAL) (W. Bengal); Gamble 8905, Clarke 34279 (Bihar) Fischer 836, 839 (Tamil Nadu), Lawson 154 (Travancore); Fischer 1812 (Dhoni).

L. hyssopioides (Linn.) Haines, Bot. Bih. Or. 635. 1922; Mukherjee, J. Ind. Bot. Soc. 24: 132. 1945; Philcox, Kew Bull. 22: 50. 1968. *Gratiola hyssopioides* Linn. Mant. 174. 1767. *Ilysanthes hyssopioides* (Linn.) Benth. in DC. Prod. 10: 419. 1846; Hook. f. Fl. Brit. Ind. 4: 283. 1884; Gamb. Fl. Madr. 961. 1923.

Erect herbs, leaves variable in size and shape, basally veined, entire; flowers blue, axillary, solitary; pedicels very variable in length, deflexed in fruit; capsules ovoid, twice as long as the calyx.

Common in wet low lands in South and S. E. Asia. In India it is reported from South and also East Himalayas. It is difficult to differentiate this species and *L. parviflora* as has been mentioned by Santapau (1967). Both are variable and the range of variations often overlap. However, shape of leaves and relative size of the reproductive parts provide rather reliable diagnostic characters, to distinguish the two.

Selected specimens examined:

Vajravelu 27597, Joseph 17724 (Palghat), Rama Rao 1674, Ellis 18589, Sivarajan 47, 21632, 21633 (Calicut), Rama Rao 2187 (Quilon), Fischer 1811 (Palghat), Calder & Ramaswami 965 (Travancore), Balakrishnan 10210 (Coimbatore). Subramanyam 6591, 7524

(Salem), Ellis 34662, Subba Rao 36603 Nilgiri), Bourne 1132 (Pulney), Perottet 51 (Shevaroi Hills), Subba Rao 22579 (Visakhapatnam), Chandra Bose 45179 (Chittoor), Gamble 21807 (Visakhapatnam), Meebold 8237 (Karnataka), Balakrishnan sn. 83875 (S. Canara), Deka 19324 (Chirapunjee), Balakrishnan 47034, 47196 (Khasia & Jaintia Hills), Subramanyam 7182 (Bastar), Reddi 99079 (Poona).

L. manilaliana Sivarajan, Kew Bull. 31: 151-153. 1976.

Annual fleshy herbs, rooting at lower nodes, closely resembling the two preceding species but can readily be identified by undivided staminodes, erect fruiting pedicels and unreduced upper leaves.

Reported from Calicut (Kerala), in wet swampy low lands.

Specimens examined:

Sivarajan 435 (Calicut), Sivarajan & Suresh 21629 (Calicut).

L. crustacea (Linn.) F. Muell. Syst. Cens. Austral. Pl. 1: 97. 1882; Mukherjee, J. Ind. Bot. Soc. 24: 130. 1945; Philcox, Kew Bull. 22: 17. 1968. *Capraria crustacea* Linn. Mant. 1: 87. 1767. *Vandellia crustacea* (Linn.) Benth. Scroph. Ind. 35. 1835 & in DC. Prod. 10: 413. 1846; Hook. f. Fl. Brit. Ind. 4: 279. 1884; Gamb. Fl. Madr. 959. 1923.

Erect or diffuse herbs, often purplish in colour; leaves ovate to elliptic, crenate-serrate or subentire; flowers pink, axillary, solitary and in terminal racemes; pedicels long; capsules equalling the calyx.

A variable species growing in almost all types of habitats, in South and S. East Asia, tropical Africa and America. In India throughout.

Selected specimens examined:

Rama Rao 1346 (Alleppy), Calder & Rama-

swami 14 (Konni), Sivarajan 23, 322, 360, 1369 (Calicut), Thomson 316, Fischer 2075 (Nilgiri), Talbot 9, 469 (N. Canara), Raju 548 (Godavari), Balakrishnan 934 (Srikakulam); Cooke 64 (Mahabaleshwar), R. S. Rao 92497 (Maharashtra), Abraham 164 (Orissa), Clarke 34173 (Chota Nagpur); Prain sn. 322990 (CAL), Malick 265 (Purulia), Ghosh 2444 (Hoogly), Balakrishnan 39282, Panigrahi 11206 (Assam), R. S. Rao 8823 (Tripura), King sn. 322971 (CAL), Duthie 4247, 4249 (U.P.), Panigrahi 12958 (Bilaspur), Sebastine 8756 (Rewa), Ansari 63825 (Gujarat), R. S. Rao 19969 (NEFA).

Panigrahi 238354, 23867 and Janaki Ammal 9268 (CAL) labelled as *L. crustacea* are *Lobelia alsinoides* and Fischer 859 is *Torenia lindernioides*. It is observed that this species is usually confused with *L. nummularifolia* (Narayanaswamy 3359 CAL) and *L. pusilla* (T. A. Rao 8037 CAL, Panigrahi 21534, Deb 29162 (ASSAM), also besides the earlier mentioned species.

L. viscosa (Hornem.) Merr. Sp. Blanc. 14. 1918 & En. Philip. Pl. 3: 349. 1923; Philcox, Kew Bull. 22: 38. 1968. *Gratiola viscosa* Hornem. En. Pl. Hort. Hafn. 19: 1807; *Vandellia hirsuta* Benth. Scroph. Ind. 36. 1835; Gamb. Fl. Madr. 959. 1923; *Lindernia hirsuta* (Benth.) Wettst. in Engl. & Pr. Pfam. 4 (3b): 79. 1891; Mukherjee, J. Ind. Bot. Soc. 24: 131. 1945.

Erect or diffuse herbs, softly hairy throughout leaves ovate-oblong to obovate, obtuse, crenate-serrate; flowers white with a yellow mouth; capsules subglobose, almost as long as the fruiting calyx.

In moist, shady places, in Malaysia and Indian subcontinent. In India, along Himalayas and S. India.

Specimens examined:

Erady 2170, Sivarajan 343 (Calicut), Deka 21550 (K.&J. Hills), Bor 17246 (Aka Hills); Naithani 1953 (Dehra Dun), Nafday 32 (Nagpur), Sharma 515 (Calcutta).

L. multiflora (Roxb.) Mukherjee, J. Ind. Bot. Soc. 24: 131. 1945. Philcox, Kew Bull. 22: 36. 1968. *Torenia multiflora* Roxb. Fl. Ind. (ed. Carey 3: 96. 1832 *Vandellia multiflora* (Roxb.) G. Don, Gen. Syst. 4: 549. 1838; Hook. f. Fl. Brit. Ind. 4: 280. 1884.

Erect or diffuse, glabrous herbs with variable leaves; flowers in terminal racemes, short pedicelled; calyx deeply divided; capsules equalling the calyx.

In marshes and lowlands of Malaysia and India.

Specimens examined:

Mandal 9(?); Kurz sn. 323068, Chatterjee 729, Sen Gupta 72, Dutt 472 (W. Bengal); King 56, Banerjee 432 (Champaran, Bihar).

L. molluginoides (Benth.) Wettst. in Natur. Pflanzen. f. iv. 3b: 80. 1891. *Vandellia molluginoides* Benth. Scroph. Ind. 35. 1835.

Erect or diffuse herbs; leaves ovate-elliptic; flowers in apparent terminal racemes; pedicellate; calyx pubescent; capsules equalling the calyx.

This species can be distinguished from the related New Guinean species, *L. glabra* Philcox, by the pubescent calyx and much smaller flowers.

In wet or moist places in India and Burma.

Specimens examined:

We have come across only a single specimen of this species (Aroong 3661, CAL) from Orissa.

L. hookeri (Clarke ex Hook. f.) Wettst. in Natur. Pflanzen. f. iv. 3b: 79. 1891; Mukherjee, J. Ind. Bot. Soc. 24: 130. 1945. *Vandellia*

hookeri Clarke ex Hook. f. Fl. Brit. Ind. 4: 280. 1884. *V. stemonoides* Haines, Bot. Bihar & Orissa, 661. 1922, non Miq.

Diffusely branched, hairy herbs; leaves ovate-oblong or lanceolate, hairy; flowers in terminal and axillary verticillate clusters; pedicels hairy; calyx hispid; strongly ribbed, cleft to the base.

In moist or wet places in Bihar, Bengal and N. E. Himalayas.

Specimens examined:

Meebold 6356 (Manipur); Clarke 40642, 40647 & sn. 323054 (CAL) and Clarke's illustration of the species. Panigrahi 16766 (NEFA) in the Shillong Herbarium of Botanical Survey of India labelled as *L. hookeri* is actually *Torenia thourasii*.

L. hookeri var. *kumaunensis* Pennell (Acad. Nat. Sci. Phil. Monogr. 5: 29. 1943) is recorded here on the authority of Pennell & Mukherjee (1945). The authors did not come across materials of this taxon in any of the Herbaria consulted.

L. elata (Benth.) Wettst. in Natur. Pflanzen. f. iv. 3b: 79. 1891; Mukherjee, J. Ind. Bot. Soc. 24: 131. 1945. *Vandellia elata* Benth. Scroph. Ind. 36. 1835 & in DC. Prodr. X: 414. 1846; Hook. f. Fl. Brit. Ind. 4: 280. 1884.

Slender, wiry herbs with short-petioled, ovate-acute, serrate leaves; flowers short pedicelled; calyx deeply divided, linear; capsules subglobose, as long as the calyx.

Andaman & Nicobar.

Specimens examined:

Mukherjee (l.c.) has recorded this species from Burma. This species is represented in the Calcutta Herbarium by a single specimen, Helfer 3908 from Andamans & Nicobar and hence included here.

L. procumbens (Krick.) Philcox, Taxon 14: 30.

1965 & Kew Bull. 22: 29. 1968. *Anagalloides procumbens* Krock. Fl. Siles 2: 398 t. 1790. *Lindernia pyxidaria* Linn. Mant. 2: 252. 177; Mukherjee, J. Ind. Bot. Soc. 24: 131. 1945, *nom. illeg.* *Vandellia erecta* Benth. Scroph. Ind. 36. 1835, in part; Hook. f. Fl. Brit. Ind. 4: 281. 1884.

Erect annuals; leaves sessile, ovate-obtuse; flowers white, long-pedicelled; capsules ellipsoid, 3-4 mm long.

In wet lowlands in South and S. E. Asia. In India throughout.

Specimens examined:

Meebold 10380, Arora 3747 & 3952 (?); Hooker J. D. sn. 32175, Anderson sn. 323174 (Sikkim); Verma 1976 (Rajasthan); Thomson sn. 323185 (Punjab); Kurz sn. 323176, Dutta 51, Prain sn. 323179 (W. Bengal); Clarke 31357 (Kashmir); Duthie 8362, 9626, 9630 (M.P.); Duthie 4248 (U.P.); Brekett 298 (Bihar).

L. montana (Blume) Koord. Exk. Fl. Java 3: 178. 1912; Philcox, Kew Bull. 22: 44. 1968. *Diceros montanus* Blume, Bijdr. 752. 1826. *Vandellia mollis* Benth. Scroph. Ind. 37. 1835; Hook. f. Fl. Brit. Ind. 4: 281. 1884. *Lindernia mollis* (Benth.) Wettst. in Natur. Pflanzen. f. iv. 3b: 79. 1891; Mukherjee, J. Ind. Bot. Soc. 24: 131. 1945.

Diffuse, profusely hairy herbs; leaves ovate to oblong, crenate-serrate, subsessile; flowers axillary, solitary or in few-flowered cymes; capsules shorter than calyx.

In marshy lowlands, in Indochina, Malaysia and India.

Specimens examined:

Bor 17244 (Aka Hills), 6480 (Naga Hills); Deka 23324 (K. & J. Hills), 16898 (Lakhimpur); Craib 182 (Haflong); Gammie 149, Watt 11728 (Assam); Hook. f. & Thoms. sn. 323158

(CAL) (Meghalaya); Panigrahi 14976, R. S. Rao 19976, 20084, Deb. 26644, 25870 (NEFA); Cousins 65, 167, Ripley 20. 47 (W. Bengal); Ribu 848, Watt 5717, King sn. 323148, Anderson 24816 (Sikkim).

L. pusilla (Willd.) Boldingh, Zakfl. Landbowstr. Java 165. 1916; Philcox Kew Bull. 22: 41. 1968. *Gratiola pusilla* Willd. Sp. Pl. 1: 105. 1797. *Vandellia scabra* Benth. Scroph. Ind. 36. 1835; Hook. f. Fl. Brit. Ind. 4: 414. 1884. *Lindernia hirta* (Cham. & Schlechtend.) Pennell, J. Arn. Arb. 24: 250. 1943; Mukherjee, J. Ind. Bot. Soc. 24: 131. 1945. *L. laxa* (Benth.) Mukherjee, J. Ind. Bot. Soc. 24: 1945. *Vandellia laxa* Benth. Scroph. Ind. 36. 1835; Blat. & Hallb. J. Bombay nat. Hist. Soc. 25: 416. 1918.

Prostrate or diffuse herbs rooting at nodes, hirsute all over; leaves ovate to orbicular, basally veined; flowers white with a yellow throat; distinctly pedicellate; capsules subglobose, less than the fruiting calyx.

In marshy lowlands, in South and S. E. Asia and S. Africa.

Specimens examined:

Fischer 4526 (Puttur), Meebold 8551 (S. Kanara), Calder & Ramaswamy 1618 (Travancore), Meebold 12153 (Cochin); Sivarajan 44, 436 (Calicut), Wight 2381 (?), Bennet 986 (Howrah), Saxena 1352, Panigrahi 23867 (Orissa), Clarke 26555 (W. Bengal), Prain sn. 323102 Banerjee 516 (Bihar), 4210 (Assam), Prain sn. 323107 (Nagaland), Ribu 3702 (Sikkim), Debbarman 742 (Tripura).

L. nummularifolia (D. Don) Wettst. in Natur. Pflanzen. f. iv. 3b: 79. 1891; Mukherjee, J. Ind. Bot. Soc. 24: 132. 1945; Saldanha & Nicolson, Fl. Hassan Dt. 522. 1976. *Vandellia nummularifolia* D. Don. Prodr. Fl. Nep. 86. 1825; Hook. f. Fl. Brit. Ind. 4: 282. 1884; *V. sessiliflora* Benth. Scroph. Ind. 37:

1835; Hook. f. Fl. Brit. Ind. 4: 282. 1884; *Lindernia sessiliflora* (Benth.) Wettst. in Natur. Pflanzen. f. iv. 3b. 79. 1891; Mukherjee, J. Ind. Bot. Soc. 24: 132. 1945; Philcox, Kew Bull. 22: 10. 1968.

Erect annuals, 4-5 cm tall; leaves sessile, ovate, serrate; flowers sessile or pedicellate; capsules ellipsoid, much longer than the fruiting calyx.

In shaded grasslands in Malaysia, India and Burma.

Specimens examined:

Vajravelu 41889, Sharma 35901 (Nilgiri); Barner sn. 131561 (Gudalur), Meebold 10113, 11537, Fischer 174, Clarke sn. 323219, 40053 (Tamil Nadu), Sexton 1264 (Maharashtra), Mukherjee 3894 (Bihar), Kinghorn 3, Gamble 3454 (W. Bengal), Johnson sn. 323199, King sn. 323201, Gill 117, Gupta 1546, Hooper 38962, Gamble 15091, Duthie sn. 323234 (CAL), Meebold 2826 (U.P.); Clarke 23712 (Himachal), 40053, Balakrishnan 658 (Assam), Clarke 40957, Prain sn. 323216 (CAL) (Nagaland), Panigrahi 14739, R. S. Rao 16451 (NEFA); Kurz sn. 323205 (CAL), Thomson sn. 323234 (CAL) (Sikkim).

L. anagallis (Burm. f.) Pennell, J. Arn. Arb. 24: 252. 1943; Mukherjee, J. Ind. Bot. Soc. 24: 133. 1945; Philcox, Kew Bull. 17: 484. 1964 & Kew Bull. 22: 45. 1968. *Ruellia anagallis* Burm. f. Fl. Ind. 135. 1768. *Vandellia pedunculata* Benth. Scroph. Ind. 37. 1835 & DC. Prodr. 10: 416. 1846; Hook. f. Fl. Brit. Ind. 4: 282. 1884. *V. angustifolia* Benth. Scroph. Ind. 37. 1835 & DC. Prodr. 10: 417. 1846; Hook. f. Fl. Brit. Ind. 4: 282. 1884; *V. cordifolia* (Colsm.) G. Don, Gen. Syst. 4: 549. 1838; Haines, Bot. Bihar & Orissa 633. 1922. *Lindernia angustifolia* (Benth.) Wettst. in Natur. Pflanzen. f. iv. 3b: 79. 1891; Mukherjee, J. Ind. Bot. Soc.

24: 132. 1945. *L. cordifolia* (Colsm.) Merr. En. Born. Pl. 524. 1921 & En. Philip. Pl. 3: 437. 1923; Mukherjee, J. Ind. Bot. Soc. 24: 132. 1945.

Prostrate or diffuse annuals rooting at lower nodes; leaves very variable, ovate to linear-lanceolate, crenate-serrate to sub-entire; flowers white or pink axillary, solitary or in terminal racemes; capsules linear.

Specimens examined:

Sethi & Negi 25831 (Kerala), Sivarajan 1664, 1665 (Calicut), Rama Rao 2188 (Quilon), Ritchie 1134 (S. Concan), Wight 2380, Gamble? (CAL) (Tamil Nadu), Sebastine 3130 (Coimbatore), Rodriguez 2069 (Pulneys), Fischer 4551 (S. Canara), Dalzell sn. 323267 (CAL) (Maharashtra), Narayana Swamy 530 (Kota), Talbot 2129 (Orissa), (Of the 5 sheets of Panigrahi 8725 from Orissa (CAL) labelled as *Vandellia pedunculata* four belong to *Mecardonia procumbens*), Ribu 942 (Sikkim), Craib 542, King sn. 323251 (CAL), Clarke 37854 (Assam), R. S. Rao 1641, Debarman 190, Biswas 4962 (NEFA), Thothathri

10002 (Bihar), Kurz sn. 323243, Mukherjee 5615 (W. Bengal), Panigrahi & Arora 8557 (Madhya Pradesh), Duthie 224 (Garwal).

In marshy lowlands in South and S. E. Asia. In India throughout.

Excluded species:

Ilysanthes capensis Benth. The single sheet (Meebold 10380, sn. 323467, CAL) from Tarikerem, Mysore(?) at an altitude of 2000 feet is labelled *Ilysanthes capensis* by Meebold who has also noted that it is a novelty to India. However, it seemed to us to be *L. parviflora*.

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